

Appendix C: Property #9 – 1374 21st Street

BARKER LEMAR
ENGINEERING CONSULTANTS

Summary of Activities
Iowa USTfields Project – City of Des Moines
Property Owner - Polk County
1374 21st Street
Des Moines, IA

1.0 INTRODUCTION

BARKER LEMAR ENGINEERING CONSULTANTS was contracted by the Iowa Department of Natural Resources in partnership with the City of Des Moines, the EPA, and the Iowa Underground Storage Tank Financial Responsibility Program to assess and clean up contaminated sites within the pilot project area with the ultimate goal of redevelopment. The sites are located in the Drake Neighborhood area within the City of Des Moines.

Initial activities included identifying sites where potential petroleum contamination may be located which could hinder future development activities. The potential petroleum contaminated sites were identified by a search of Polk directories, Sanborn maps, review of IDNR underground storage tank and leaking underground storage tank records, and review of the Fire Marshall's records.

The site at 1374 21st Street is currently owned by the Polk County. A previous electromagnetic survey conducted in 1996 indicated some anomalies near the southeast portion of the site. Additionally, this site was assessed as part of the leaking underground storage tank site 9LTB03 during a site Tier 2 cleanup assessment, conducted in 2000. Elevated concentrations of petroleum compounds were measured in the soil and water on this property during the Tier 2 assessment for 9LTB03.

2.0 SAMPLING ACTIVITIES

During the Tier 2 assessment, the toluene, ethylbenzene and xylenes soil maximums were identified on the property at 1374 21st. As part of the USTfield work, soil

resampling was conducted at this soil source area. A sample was collected at a depth of 9-11 feet below ground surface. This corresponded to the depth of the original soil sample collected at this location, and also was where the highest field screening measurement was noted during the current field activities. The location of this boring can be seen on Figure 1, and a boring log is included in Appendix A. Groundwater samples were collected from existing monitoring wells MW-5 and MW-11. Monitoring well MW-5 showed an increase in benzene concentration and MW-11 showed a decline. Soil resampling, showed significant decline in BTEX concentrations at MW-5. This data will be incorporated into the site monitoring information for 9LTB03. Copies of the soil and groundwater laboratory data are included in Appendix B.

3.0 GEOPROBE WORK

Due to the previous results of the electromagnet survey and due to contamination located on the property, geoprobe drilling was proposed to identify tanks that may be located on the site. BARKER LEMAR personnel were on site on February 23, 2004, to conduct shallow geoprobe drilling in the suspect area observed during the electromagnetic survey. Borings were concentrated on the southeast corner based on the electromagnetic survey results.

Fourteen geoprobe borings were installed to a depth of approximately seven (7) feet below ground surface. Approximate locations of the geoprobe borings are shown on Figure 1.

No obstructions were encountered during the geoprobe work.

4.0 CONCLUSION

BARKER LEMAR conducted assessment activities to identify potential underground storage tanks located on the property owned by Polk County at 1374 21st Street in Des

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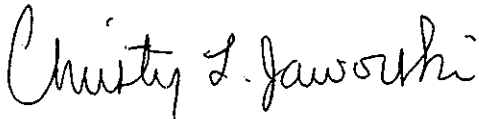
Moines, Iowa. Results of the geoprobe activities did not indicate any evidence of buried tanks.

Sampling activities were also conducted, and included the installation of a soil boring and collection of soil and groundwater samples. This data will be utilized in evaluation of LUST site 9LTB03 with the ultimate goal to reclassify the site to no action required

We have appreciated being of service to you on this project. If you have any questions concerning this submittal, please do not hesitate to contact our office.

Sincerely,

BARKER LEMAR ENGINEERING CONSULTANTS



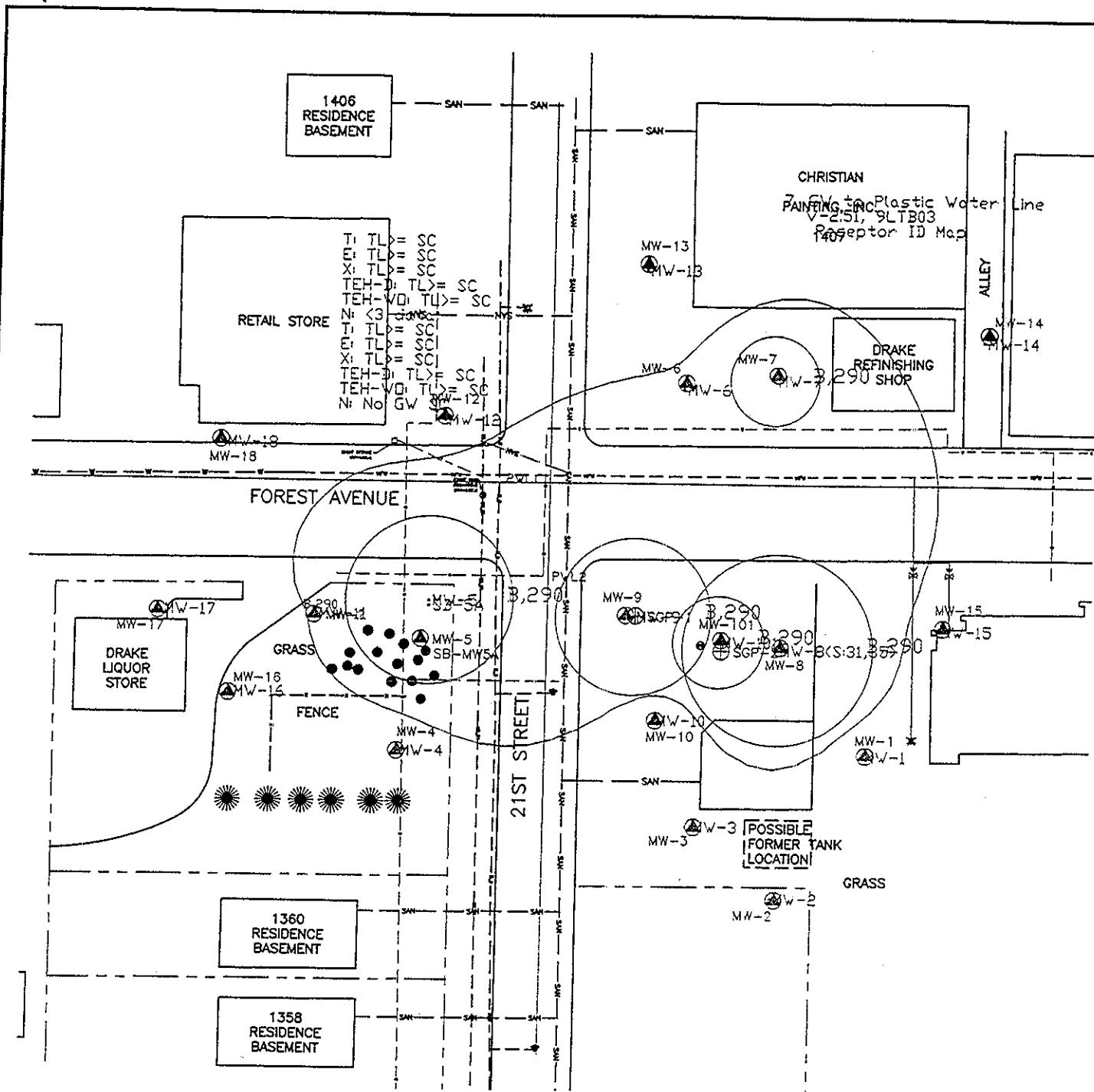
Christy L. Jaworski
Senior Project Manager



Anita Maher-Lewis
Regional Manager

FIGURE 1

SITE PLAN MAP



LEGEND

- | | | | |
|------|---------------------------------------|-----|----------------------|
| MW-1 | APPROXIMATE MONITORING WELL LOCATION | W | WATER SUPPLY |
| • | APPROXIMATE LOCATION OF GEOPROBE | PL | PLASTIC WATER SUPPLY |
| SG-1 | APPROXIMATE LOCATION OF SOIL GAS WELL | SAN | SANITARY SEWER |
| | | SS | STORM SEWER |
| | | --- | PROPERTY BOUNDARY |
| | | x | FENCELINE |



SCALE



SITE MAP
 GEOPROBE SAMPLING
 1374 21ST STREET
 PROJECT NO. IADNR 001
 DRAWING DATE: MARCH, 2004

BARKER LEMAR
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FIGURE

1

APPENDIX A

Boring/Monitoring Well Logs

SOIL BORING LOG AND MONITORING WELL CONSTRUCTION DIAGRAM

Boring / Well Number: MW-5a	Facility Name:	Facility Street Address: 21 st & Forest
Boring Depth (ft) X Diameter (in): 15' x 2"		Drilling Method: Direct Push
Certified Well Contractor Name: Wade Bolinger Certification Number: 6859		Logged by: John Wyciskalla

Ground Surface Elevation (ASL):	Top of Casing Elevation (ASL):
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Date: 2/23/04	Date: 2/23/04	UST NA	LUST NA
Start Time: NA	End Time: NA	Number:	Number:

Depth (feet)	Well Construction Details	Blow Count if applicable	Sample No	Type*	Field Screening Results (PID / FID)	Rock Formations, Soil, Color and Classifications, Observations (moisture, odor, etc) First column for USCS
	Boring Only		1	1-3	0	0 0'-0 5' Asphalt
			2	3-5	0	0 5'-1.0' Asphalt Crumble
			3	5-7	0	1 0'-3 0' Brown sandy lean clay
			4	7-9	0	3 0'-5 0' Brown sandy lean clay w/trace sand
			5	9-11	39	5 0'-7 0' Brown sandy lean clay w/trace gravel
			6	11-13	29	7 0'-9 0' Gray sandy clay w/trace gravel
			7	13-15	12	9 0'-11 0' Gray sandy clay w/odor trace gravel
						11 0'-11.5' Gray firm sand
						11 5'-13 0' Gray sandy clay w/trace gravel
						13 0'-15 0' Gray fat clay w/sand and gravel

HSA (hollow stem auger)

Observations	Date:				
Water Levels (ASL)	Level:				
Static Water Level Symbol (v)	Time:				

APPENDIX B

Laboratory Analytical Results

Accreditations:
Iowa DNR: 095
New Jersey DEP: 1A001
Kansas DHE: E-10287

ANALYTICAL REPORT

March 09, 2004

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Work Order: 14B0896

Report To
Christy Jaworski Barker-Lemar Associates 1801 Industrial Circle Des Moines, IA 50315

Work Order Information
Date Received: 02/24/2004 11:10AM Collector: Wyciskalla, J. Phone: 515-256-8814 PO Number:

Project : UST-Iowa
Project Number: 20th & Forest

Analyte	Result	MRL	Batch	Method	Analyst	Analyzed	Qualifier
14B0896-01 MW-5a				Matrix: Water		Collected: 02/23/04 00:00	
<i>Determination of Volatile Petroleum Hydrocarbons</i>							
Benzene	1340 ug/l	50	1C40310	OA-1 (GC/MS)	JRF	03/02/04 21:31	
Toluene	342 ug/l	50	1C40310	OA-1 (GC/MS)	JRF	03/02/04 21:31	
Ethylbenzene	292 ug/l	50	1C40310	OA-1 (GC/MS)	JRF	03/02/04 21:31	
Xylenes, total	818 ug/l	100	1C40310	OA-1 (GC/MS)	JRF	03/02/04 21:31	
Methyl-t-butyl Ether (MTBE)	<50 ug/l	50	1C40310	OA-1 (GC/MS)	JRF	03/02/04 21:31	
Ethyl-tert-Butyl Ether (ETBE)	<100 ug/l	100	1C40310	OA-1 (GC/MS)	JRF	03/02/04 21:31	
Di-iso-Propyl Ether (DIPE)	<100 ug/l	100	1C40310	OA-1 (GC/MS)	JRF	03/02/04 21:31	
tert-Amyl Methyl Ether (TAME)	<100 ug/l	100	1C40310	OA-1 (GC/MS)	JRF	03/02/04 21:31	
tert-Butyl Alcohol (TBA)	<2500 ug/l	2500	1C40310	OA-1 (GC/MS)	JRF	03/02/04 21:31	
Surrogate 4-Bromofluorobenzene	99.8 %			81-124	JRF	03/02/04 21:31	
<i>Determination of Extractable Petroleum Hydrocarbons</i>							
TEH, as gasoline	31.5 mg/l	0.2	1C40121	Iowa OA-2	SMG	03/09/04 11:34	
TEH, as #2 diesel fuel	<0.1 mg/l	0.1	1C40121	Iowa OA-2	SMG	03/09/04 11:34	
TEH, as waste oil	<0.1 mg/l	0.1	1C40121	Iowa OA-2	SMG	03/09/04 11:34	
Total Extractable Hydrocarbons	31.5 mg/l	0.2	1C40121	Iowa OA-2	SMG	03/09/04 11:34	
Surrogate Pentacosane	114 %			70-130	SMG	03/09/04 11:34	

14B0896-02 MW-5a				Matrix: Soil		Collected: 02/23/04 00:00	
<i>Determination of Volatile Petroleum Hydrocarbons</i>							
Benzene	<0.100 mg/kg	0.100	1C40411	OA-1 (GC/MS)	JRF	03/04/04 0:52	R-05
Toluene	<0.100 mg/kg	0.100	1C40411	OA-1 (GC/MS)	JRF	03/04/04 0:52	R-05
Ethylbenzene	0.749 mg/kg	0.100	1C40411	OA-1 (GC/MS)	JRF	03/04/04 0:52	R-05
Xylenes, total	<0.200 mg/kg	0.200	1C40411	OA-1 (GC/MS)	JRF	03/04/04 0:52	R-05
Methyl-t-butyl Ether (MTBE)	<0.200 mg/kg	0.200	1C40411	OA-1 (GC/MS)	JRF	03/04/04 0:52	R-05
Di-iso-Propyl Ether (DIPE)	<0.200 mg/kg	0.200	1C40411	OA-1 (GC/MS)	JRF	03/04/04 0:52	R-05
Ethyl-tert-Butyl Ether (ETBE)	<0.200 mg/kg	0.200	1C40411	OA-1 (GC/MS)	JRF	03/04/04 0:52	R-05
tert-Amyl Methyl Ether (TAME)	<0.200 mg/kg	0.200	1C40411	OA-1 (GC/MS)	JRF	03/04/04 0:52	R-05
tert-Butyl Alcohol (TBA)	<5.01 mg/kg	5.01	1C40411	OA-1 (GC/MS)	JRF	03/04/04 0:52	R-05
Surrogate 4-Bromofluorobenzene	101 %			81-124	JRF	03/04/04 0:52	R-05
<i>Determination of Extractable Petroleum Hydrocarbons</i>							
TEH, as gasoline	1300 mg/kg	10	1C40440	Iowa OA-2	SMG	03/09/04 12:23	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. Samples were preserved in accordance with 40 CFR for pH adjustment unless otherwise noted.
MRL = Method Reporting Limit.

Barker-Lemar Associates
 1801 Industrial Circle
 Des Moines, IA 50315

March 09, 2004

Work Order: 14B0896

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Analyte	Result	MRL	Batch	Method	Analyst	Analyzed	Qualifier
14B0896-02 MW-5a				Matrix: Soil		Collected: 02/23/04 00:00	
<i>Determination of Extractable Petroleum Hydrocarbons</i>							
TEH, as #2 diesel fuel	<5 mg/kg	5	1C40440	Iowa OA-2	SMG	03/09/04 12:23	
TEH, as waste oil	<5 mg/kg	5	1C40440	Iowa OA-2	SMG	03/09/04 12:23	
Total Extractable Hydrocarbons	1300 mg/kg	10	1C40440	Iowa OA-2	SMG	03/09/04 12:23	
Surrogate: Pentacosane	86.5 %			60-140	SMG	03/09/04 12:23	

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Determination of Volatile Petroleum Hydrocarbons - Quality Control

Keystone Laboratories, Inc. - Newton

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1C40310 - EPA 5030B										
Blank (1C40310-BLK1)				Prepared & Analyzed: 03/02/04						
Surrogate 4-Bromofluorobenzene	51.5		ug/l	50.0		103	81-124			
Benzene	ND	1	"							
Toluene	ND	1	"							
Ethylbenzene	ND	1	"							
Xylenes, total	ND	2	"							
Methyl-t-butyl Ether (MTBE)	ND	1	"							
Ethyl-tert-Butyl Ether (ETBE)	ND	2	"							
Di-iso-Propyl Ether (DIPE)	ND	2	"							
tert-Amyl Methyl Ether (TAME)	ND	2	"							
tert-Butyl Alcohol (TBA)	ND	50	"							
Calibration Check (1C40310-CCV1)				Prepared & Analyzed: 03/02/04						
Surrogate 4-Bromofluorobenzene	50.8		ug/l	50.0		102	81-124			
Benzene	76.2	1	"	81.0		94.1	70-130			
Toluene	81.2	1	"	66.5		122	70-130			
Ethylbenzene	79.7	1	"	69.5		115	70-130			
Xylenes total	173.4	2	"	154.5		112	70-130			
Methyl-t-butyl Ether (MTBE)	71.4	1	"	68.5		104	70-130			
Ethyl-tert-Butyl Ether (ETBE)	71.4	2	"	67.0		107	70-130			
Di-iso-Propyl Ether (DIPE)	65.0	2	"	63.0		103	70-130			
tert-Amyl Methyl Ether (TAME)	52.9	2	"	58.5		90.4	70-130			
tert-Butyl Alcohol (TBA)	1062	50	"	995.0		107	70-130			
Matrix Spike (1C40310-MS1)				Source: 14B0817-10	Prepared: 03/02/04 Analyzed: 03/03/04					
Surrogate 4-Bromofluorobenzene	50.0		ug/l	50.0		100	81-124			
Benzene	36940	500	"	29250	16500	69.9	63-138			
Toluene	132300	500	"	31250	102000	97.0	72-128			
Ethylbenzene	39170	500	"	29500	12500	90.4	69-139			
Xylenes total	105800	1000	"	58750	57400	82.4	71-136			
Methyl-t-butyl Ether (MTBE)	62000	500	"	79500	ND	78.0	65-127			

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Determination of Volatile Petroleum Hydrocarbons - Quality Control

Keystone Laboratories, Inc. - Newton

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1C40310 - EPA 5030B

Matrix Spike Dup (1C40310-MSD1) Source: 14B0817-10 Prepared: 03/02/04 Analyzed: 03/03/04

Surrogate 4-Bromofluorobenzene	50.2		ug/l	50.0		100	81-124			
Benzene	38220	500	"	29250	16500	74.3	63-138	3.41	12	
Toluene	125300	500	"	31250	102000	74.6	72-128	5.43	21	
Ethylbenzene	38620	500	"	29500	12500	88.5	69-139	1.41	12	
Xylenes total	102200	1000	"	58750	57400	76.3	71-136	3.46	10	
Methyl-t-butyl Ether (MTBE)	60420	500	"	79500	ND	76.0	65-127	2.58	18	

Batch 1C40411 - EPA 5030B

Blank (1C40411-BLK1) Prepared & Analyzed: 03/03/04

Surrogate 4-Bromofluorobenzene	0.2534		mg/kg	0.2500		101	81-127			
Benzene	ND	0.500	"							
Toluene	ND	0.500	"							
Ethylbenzene	ND	0.500	"							
Xylenes total	ND	1.00	"							
Methyl-t-butyl Ether (MTBE)	ND	1.00	"							
Di-iso-Propyl Ether (DIPE)	ND	1.00	"							
Ethyl-tert-Butyl Ether (ETBE)	ND	1.00	"							
tert-Amyl Methyl Ether (TAME)	ND	1.00	"							
tert-Butyl Alcohol (TBA)	ND	25.0	"							

Calibration Check (1C40411-CCV1) Prepared & Analyzed: 03/03/04

Surrogate 4-Bromofluorobenzene	0.2478		mg/kg	0.2500		99.1	81-127			
Benzene	0.3628	0.005	"	0.4050		89.6	70-130			
Toluene	0.4246	0.005	"	0.3325		128	70-130			
Ethylbenzene	0.3680	0.005	"	0.3475		106	70-130			
Xylenes total	0.8463	0.010	"	0.7725		110	70-130			
Methyl-t-butyl Ether (MTBE)	0.3328	0.010	"	0.3425		97.2	70-130			
Di-iso-Propyl Ether (DIPE)	0.2942	0.010	"	0.3150		93.4	70-130			
Ethyl-tert-Butyl Ether (ETBE)	0.3274	0.010	"	0.3350		97.7	70-130			
tert-Amyl Methyl Ether (TAME)	0.2468	0.010	"	0.2925		84.4	70-130			
tert-Butyl Alcohol (TBA)	4.870	0.250	"	4.975		97.9	70-130			

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 MRI = Method Reporting Limit

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 1801 Industrial Circle
 Des Moines, IA 50315

March 09, 2004

Work Order: 14B0896

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Determination of Volatile Petroleum Hydrocarbons - Quality Control
Keystone Laboratories, Inc. - Newton

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1C40411 - EPA 5030B

Matrix Spike (1C40411-MS1)

Source: 14B0956-01

Prepared & Analyzed: 03/03/04

Surrogate: 4-Bromofluorobenzene	0.0513		mg/kg	0.0506		101	81-127			
Benzene	4.096	0.101	"	5.921	ND	69.2	66-140			
Toluene	6.439	0.101	"	6.326	0.009	102	66-132			
Ethylbenzene	6.259	0.101	"	5.972	1.26	83.7	60-140			
Xylenes, total	13.00	0.202	"	11.89	1.89	93.4	71-128			
Methyl-t-butyl Ether (MTBE)	12.43	0.202	"	16.09	ND	77.3	64-120			

Matrix Spike Dup (1C40411-MSD1)

Source: 14B0956-01

Prepared & Analyzed: 03/03/04

Surrogate: 4-Bromofluorobenzene	0.0515		mg/kg	0.0506		102	81-127			
Benzene	4.413	0.101	"	5.921	ND	74.5	66-140	7.45	27	
Toluene	5.809	0.101	"	6.326	0.009	91.7	66-132	10.3	25	
Ethylbenzene	6.137	0.101	"	5.972	1.26	81.7	60-140	1.97	27	
Xylenes total	12.63	0.202	"	11.89	1.89	90.3	71-128	2.89	25	
Methyl-t-butyl Ether (MTBE)	12.80	0.202	"	16.09	ND	79.6	64-120	2.93	26	

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Determination of Extractable Petroleum Hydrocarbons - Quality Control

Keystone Laboratories, Inc. - Newton

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1C40121 - 3510C OA-2 Sep Fnl										
Blank (1C40121-BLK1)				Prepared: 03/01/04 Analyzed: 03/03/04						
Surrogate Pentacosane	0.0478		mg/l	0.0498		96.0	70-130			
TEH as gasoline	ND	0.1	"							
TEH as #2 diesel fuel	ND	0.1	"							
TEH as waste oil	ND	0.1	"							
Total Extractable Hydrocarbons	ND	0.1	"							
LCS (1C40121-BS1)				Prepared: 03/01/04 Analyzed: 03/03/04						
Surrogate Pentacosane	0.0498		mg/l	0.0498		100	70-130			
TEH as #2 diesel fuel	9.61	0.1	"	10.00		96.1	65-110			
Calibration Check (1C40121-CCV1)				Prepared: 03/01/04 Analyzed: 03/03/04						
Surrogate Pentacosane	48.97		mg/l	49.80		98.3	70-130			
TEH as gasoline	2202		"	2050		107	85-115			
TEH as #2 diesel fuel	2182		"	2100		104	85-115			
TEH as waste oil	1895		"	2030		93.3	85-115			
Calibration Check (1C40121-CCV2)				Prepared: 03/01/04 Analyzed: 03/04/04						
Surrogate Pentacosane	50.38		mg/l	49.80		101	70-130			
TEH as gasoline	2211		"	2050		108	85-115			
TEH as #2 diesel fuel	2264		"	2100		108	85-115			
TEH as waste oil	1934		"	2030		95.3	85-115			
Calibration Check (1C40121-CCV3)				Prepared: 03/01/04 Analyzed: 03/08/04						
Surrogate Pentacosane	47.79		mg/l	49.80		96.0	70-130			
TEH as gasoline	2046		"	2050		99.8	85-115			
TEH as #2 diesel fuel	2139		"	2100		102	85-115			
TEH as waste oil	1785		"	2030		87.9	85-115			

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Des Moines, IA 50315

March 09, 2004

Work Order: 14B0896

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Determination of Extractable Petroleum Hydrocarbons - Quality Control

Keystone Laboratories, Inc. - Newton

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1C40121 - 3510C OA-2 Sep Fnl

Calibration Check (1C40121-CCV4)

Prepared: 03/01/04 Analyzed: 03/09/04

Surrogate Pentacosane	47.55		mg/l	49.80		95.5	70-130			
IEH as gasoline	2110		"	2050		103	85-115			
IEH as #2 diesel fuel	2214		"	2100		105	85-115			
IEH as waste oil	1829		"	2030		90.1	85-115			

Matrix Spike (1C40121-MS1)

Source: 14B0912-02

Prepared: 03/01/04 Analyzed: 03/03/04

Surrogate Pentacosane	0.0515		mg/l	0.0534		96.4	70-130			
IEH as #2 diesel fuel	10.57	0.1	"	10.73	ND	98.5	70-130			

Matrix Spike Dup (1C40121-MSD1)

Source: 14B0912-02

Prepared: 03/01/04 Analyzed: 03/03/04

Surrogate Pentacosane	0.0530		mg/l	0.0529		100	70-130			
IEH as #2 diesel fuel	9.94	0.1	"	10.63	ND	93.5	70-130	6.14	20	

Reference (1C40121-SRM1)

Prepared: 03/01/04 Analyzed: 03/03/04

Surrogate Pentacosane	51.46		mg/l	49.80		103	70-130			
IEH as #2 diesel fuel	5184	100	"	4752		109	61-110			

Batch 1C40440 - 3545 OA-2 PFE

Blank (1C40440-BLK1)

Prepared: 03/04/04 Analyzed: 03/06/04

Surrogate Pentacosane	1.93		mg/kg	2.49		77.5	60-140			
IEH as gasoline	ND	5	"							
IEH as #2 diesel fuel	ND	5	"							
IEH as waste oil	ND	5	"							
Total Extractable Hydrocarbons	ND	5	"							

LCS (1C40440-BS1)

Prepared: 03/04/04 Analyzed: 03/07/04

Surrogate Pentacosane	2.31		mg/kg	2.49		92.8	60-140			
IEH as #2 diesel fuel	398.9	5	"	500.4		79.7	61-110			

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Barker-Lemar Associates
 1801 Industrial Circle
 Des Moines, IA 50315

March 09, 2004

Work Order: 14B0896

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Determination of Extractable Petroleum Hydrocarbons - Quality Control

Keystone Laboratories, Inc. - Newton

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1C40440 - 3545 OA-2 PFE										
Calibration Check (1C40440-CCV1)				Prepared: 03/04/04 Analyzed: 03/06/04						
Surrogate Pentacosane	45.6		mg/kg	49.8		91.6	60-140			
TEH, as gasoline	2176		"	2050		106	85-115			
TEH, as #2 diesel fuel	2199		"	2100		105	85-115			
TEH, as waste oil	1832		"	2030		90.2	85-115			
Calibration Check (1C40440-CCV2)				Prepared: 03/04/04 Analyzed: 03/07/04						
Surrogate Pentacosane	47.7		mg/kg	49.8		95.8	60-140			
TEH, as gasoline	2102		"	2050		103	85-115			
TEH, as #2 diesel fuel	2270		"	2100		108	85-115			
TEH, as waste oil	2066		"	2030		102	85-115			
Calibration Check (1C40440-CCV3)				Prepared: 03/04/04 Analyzed: 03/08/04						
Surrogate Pentacosane	47.8		mg/kg	49.8		96.0	60-140			
TEH, as gasoline	2046		"	2050		99.8	85-115			
TEH, as #2 diesel fuel	2139		"	2100		102	85-115			
TEH, as waste oil	1785		"	2030		87.9	85-115			
Calibration Check (1C40440-CCV4)				Prepared: 03/04/04 Analyzed: 03/09/04						
Surrogate Pentacosane	47.6		mg/kg	49.8		95.6	60-140			
TEH, as gasoline	2110		"	2050		103	85-115			
TEH, as #2 diesel fuel	2214		"	2100		105	85-115			
TEH, as waste oil	1829		"	2030		90.1	85-115			
Matrix Spike (1C40440-MS1)				Source: 14B0956-04		Prepared: 03/04/04 Analyzed: 03/07/04				
Surrogate Pentacosane	2.35		mg/kg	2.49		94.4	60-140			
TEH, as #2 diesel fuel	428.7	5	"	500.4	ND	85.7	51-110			
Matrix Spike Dup (1C40440-MSD1)				Source: 14B0956-04		Prepared: 03/04/04 Analyzed: 03/07/04				
Surrogate Pentacosane	2.03		mg/kg	2.49		81.5	60-140			
TEH, as #2 diesel fuel	384.5	5	"	500.2	ND	76.9	51-110	10.9	18	

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Barker-Lemar Associates
1801 Industrial Circle
Des Moines, IA 50315

March 09, 2004

Work Order: 14B0896

Page 9 of 9

Determination of Extractable Petroleum Hydrocarbons - Quality Control Keystone Laboratories, Inc. - Newton

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
Batch 1C40440 - 3545 OA-2 PFE									
Reference (1C40440-SRM1)				Prepared: 03/04/04 Analyzed: 03/07/04					
Surrogate: Pentacosane	521		mg/kg	498	105	60-140			
IEH, as #2 diesel fuel	4869	100	"	4754	102	70-130			

ND = Non Detect; REC= Recovery; RPD= Relative Percent Difference

Notes and Definitions

R-05 The sample was diluted due to the presence of high levels of non-target analytes resulting in elevated reporting limits

End of Report

Jeffrey King

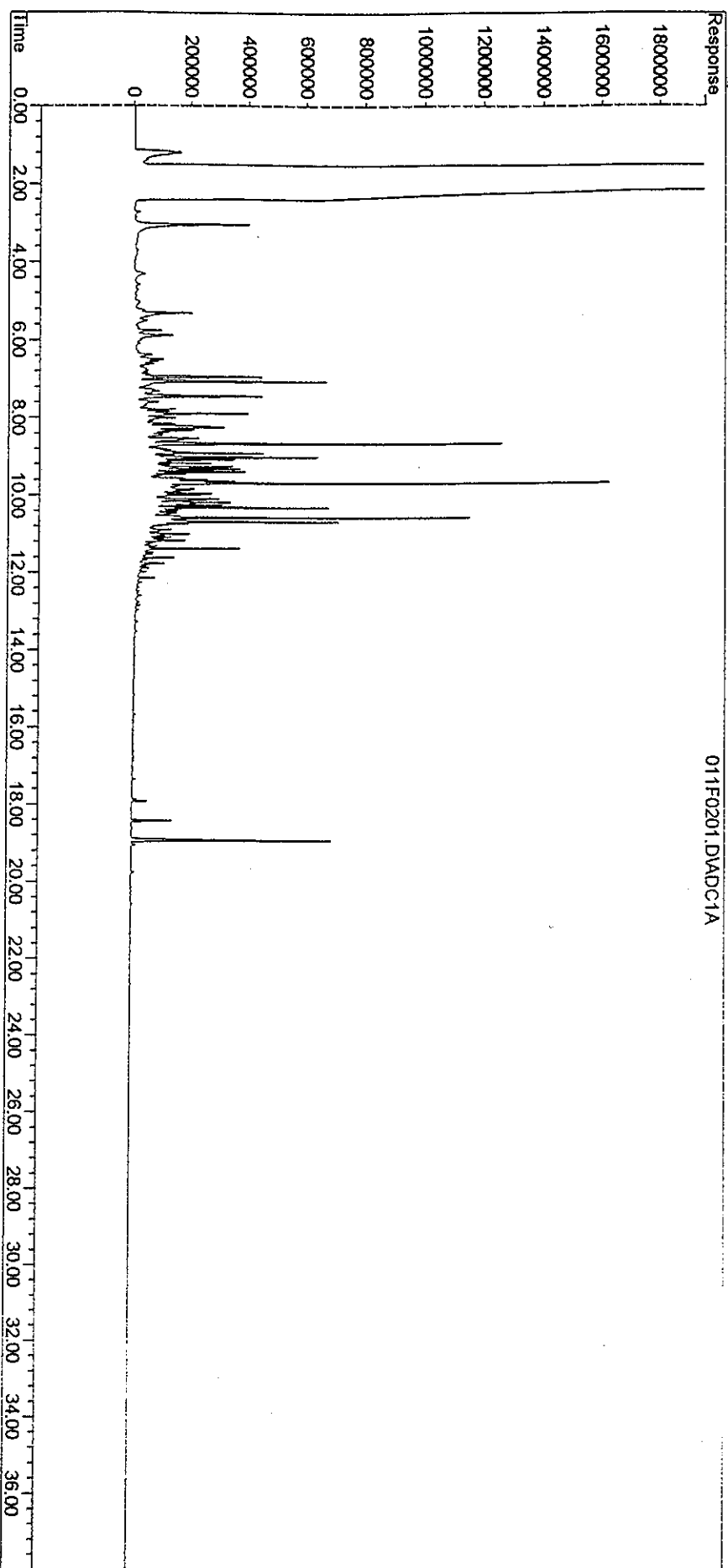
Keystone Laboratories, Inc.
Jeffrey King, Ph.D.
Laboratory Director

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Data File : G:\HPCHEM\2\DATA\030904A2\011F0201.D Vial: 11
Acq On : 09 Mar 2004 11:34 AM Operator: SMG
Sample : 14B0896-01 @2X Inst : GC #2
Misc : Multiplr: 1.00
IntFile : HYDRO.E
Quant Time: Mar 9 13:08 19104 Quant Results File: F022304.RES

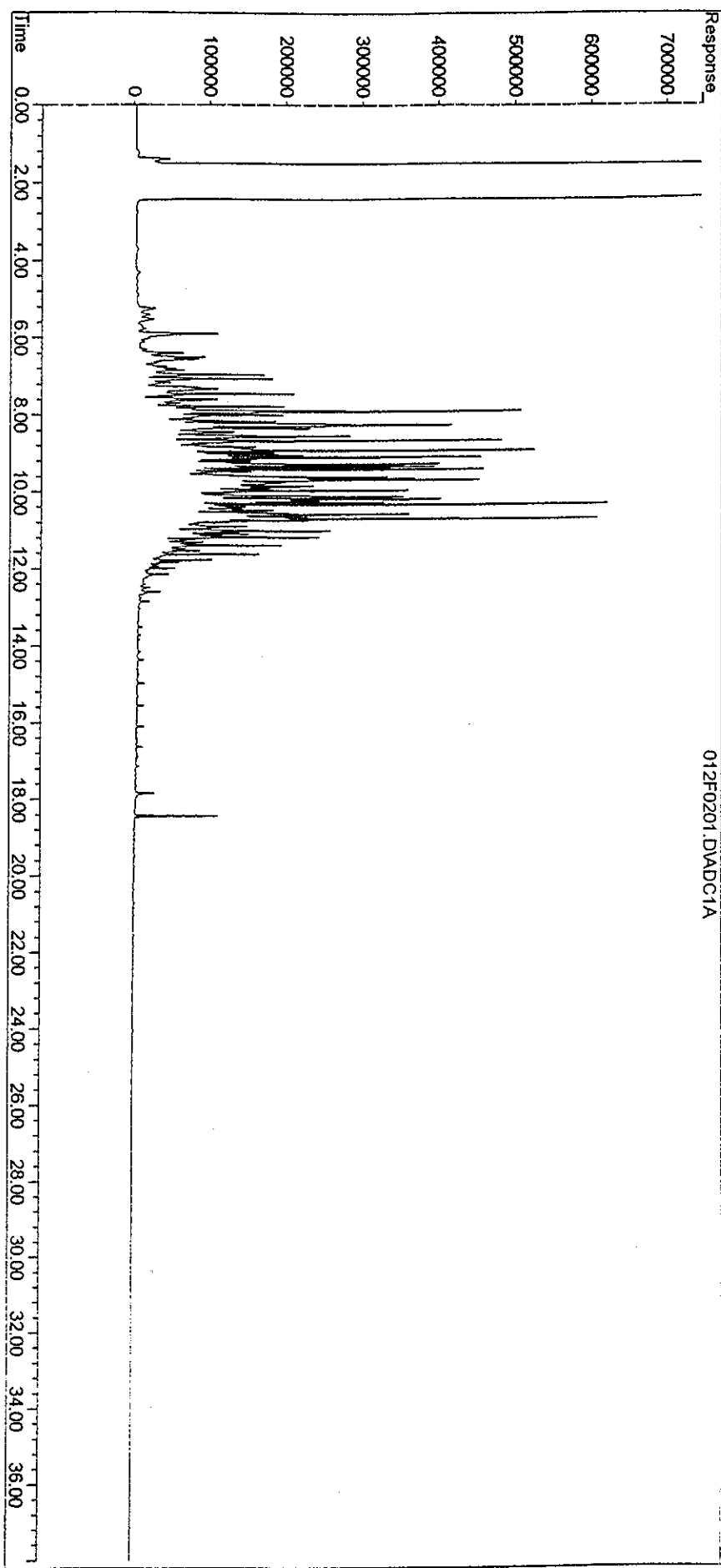
Quant Method : G:\HPCHEM\2\METHODS\F022304.M (Chemstation Integrator)
Title : 8015-500/OA-2 Method
Last Update : Tue Feb 24 08:57:51 2004
Response via : Multiple Level Calibration
DataAcq Meth : DIESEL.MTH

Volume Inj :
Signal Phase :
Signal Info :



Data File	G:\HPCHEM\2\DATA\030904A2\012F0201.D	Vial: 12
Acq On	09 Mar 2004 12:23 PM	Operator: SMG
Sample	14B0896-02 @2X	Inst: GC #2
Misc		Multiplr: 1.00
IntFile	HYDRO.E	
Quant Time:	Mar 9 13:17 19104	Quant Results File: F022304.RES
Quant Method	G:\HPCHEM\2\METHODS\F022304.M (Chemstation Integrator)	
Title	8015-500/OA-2 Method	
Last Update	Tue Feb 24 08:57:51 2004	
Response via	Multiple Level Calibration	
DataAcq Meth	DIESEL.MTH	

Volume Inj :
Signal Phase :
Signal Info :

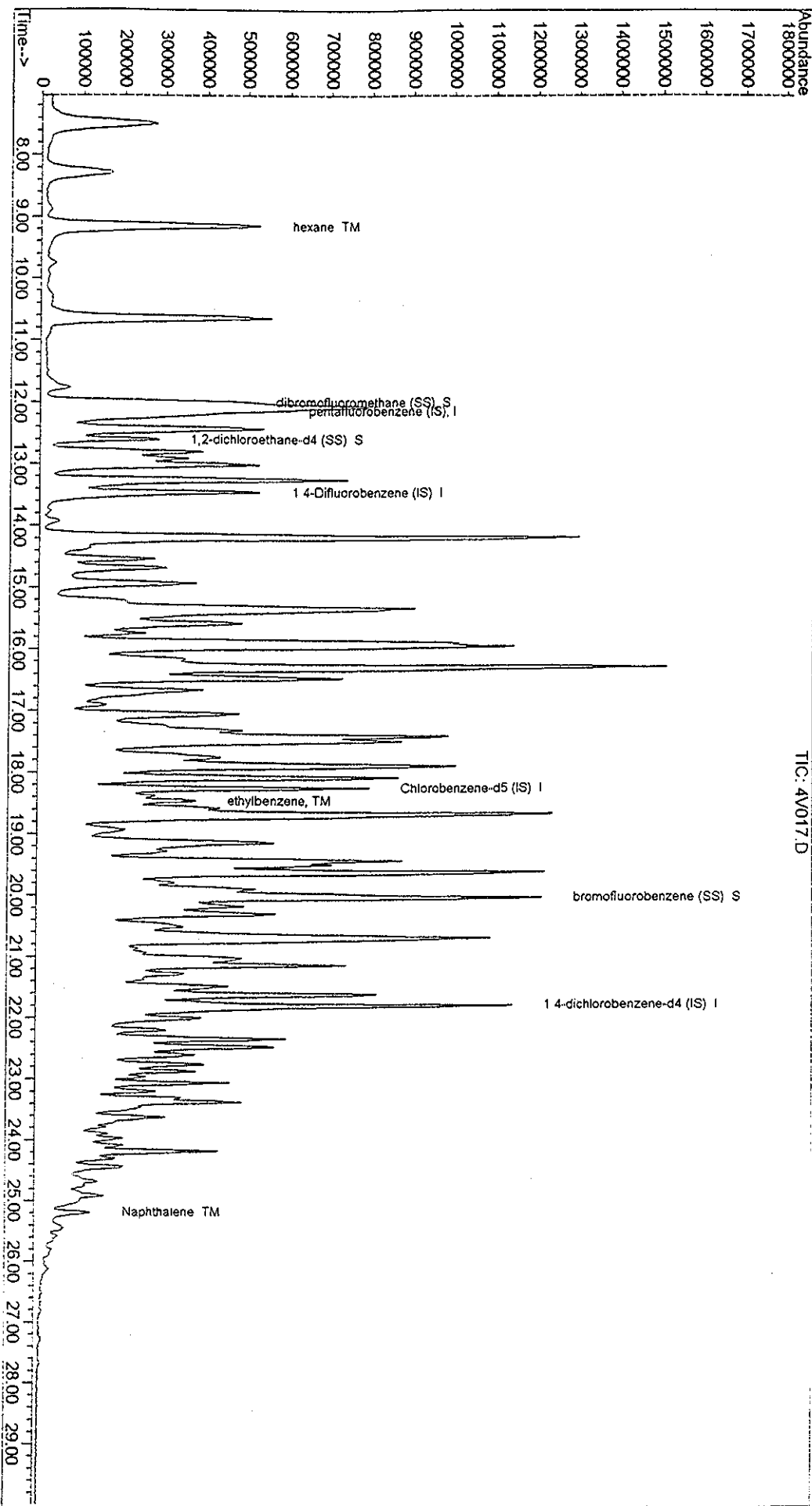


Data File : G:\MSCHEM\4\DATA\030304A4\4V017.D
 Acq On : 4 Mar 2004 12:52 am
 Sample : 14B0896-02
 Misc : 100X
 MS Integration Params: rteint.p
 Quant Time: Mar 4 7:48 2004

Vial: 17
 Operator: JRF
 Inst: MS #4
 Multiplr: 1.00

Quant Results File: BW020504.RES

Method : G:\MSCHEM\4\METHODS\BW020504.M (RTE Integrator)
 Title : RTEX Water
 Last Update : Thu Feb 05 14:28:54 2004
 Response via : Initial Calibration

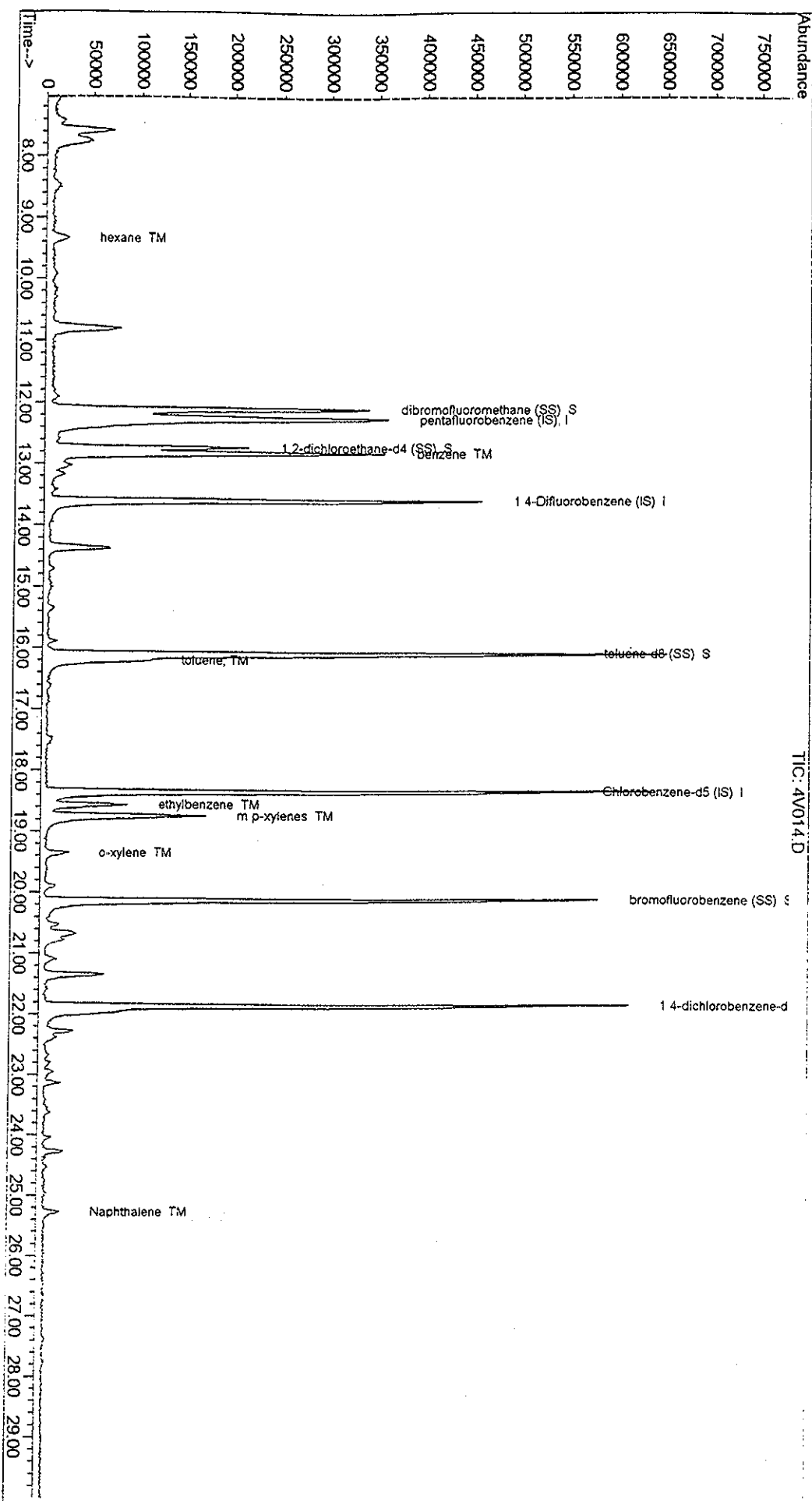


Data File : G:\MSCHEM\4\DATA\030204A4\4V014.D
Acq On : 2 Mar 2004 9:31 pm
Sample : 14B0896-01
Misc : 50X
MS Integration Params: rteint.p
Quant Time: Mar 3 7:49 2004

Vial: 14
Operator: JRF
Inst: MS #4
Multiplr: 1.00

Quant Results File: BW020504.RES

Method : G:\MSCHEM\4\METHODS\BW020504.M (RTE Integrator)
Title : RTX Water
Last Update : Thu Feb 05 14:27:51 2004
Response via : Initial Calibration





1304 Adams
Kansas City, KS 66103
Phone: 913-321-7856
Fax: 913-321-7937

OF
PART.

SAMPLER: W. C. C. C.

1
Krisi
Krisi

100

COMPANY NAME: LAUREL CLOTHES

COMPANY NAME:

ADDRESS:

ADDITIONAL INFORMATION

PHONE:

PHONE:

FAX

Keystone Quote No.

(If Applicable)

LAB USE ONLY
LABORATORY WORK ORDER NO.

**SAMPLE TEMPERATUR
UPON RECEIPT:**

 \dot{Q}

SAMPLE CONDITION/COMMENT

5	2
---	---

02

Date / /

Received by: (Signature)

Date _____

Turn-Around

☒ Standard

☐ Rust

Contact Lab Prior to Submission

Relinquished by: ~~X~~Signature)

Date

Received for Lab by: (Signature)

Date 11/

Remarks:

Accreditations:
 Iowa DNR: 095
 New Jersey DEP: IA001
 Kansas DHE: E-10287

ANALYTICAL REPORT

April 28, 2004

Work Order: 14D0851

Page 1 of 3

Report To
 Christy Jaworski
 Barker-Lemar Associates
 1801 Industrial Circle
 West Des Moines, IA 50265

Work Order Information
 Date Received: 04/16/2004 12:35PM
 Collector: Kevin Hersly
 Phone: 515-256-8814
 PO Number:

Project : UST-Iowa
 Project Number: 21st & Forest

Analyte	Result	MRL	Batch	Method	Analyst	Analyzed	Qualifier
14D0851-01 MW-11				Matrix: Water		Collected: 04/16/04 12:15	
<i>Determination of Volatile Petroleum Hydrocarbons</i>							
Benzene	10 ug/l	1	1D42320	OA-1 (GC/MS)	IVK	04/23/04 3:09	
Toluene	<1 ug/l	1	1D42320	OA-1 (GC/MS)	IVK	04/23/04 3:09	
Ethylbenzene	15 ug/l	1	1D42320	OA-1 (GC/MS)	IVK	04/23/04 3:09	
Xylenes, total	18 ug/l	2	1D42320	OA-1 (GC/MS)	IVK	04/23/04 3:09	
Methyl-t-butyl Ether (MTBE)	<1 ug/l	1	1D42320	OA-1 (GC/MS)	IVK	04/23/04 3:09	
Ethyl-tert-Butyl Ether (ETBE)	<2 ug/l	2	1D42320	OA-1 (GC/MS)	IVK	04/23/04 3:09	
Di-iso-Propyl Ether (DIPE)	<2 ug/l	2	1D42320	OA-1 (GC/MS)	IVK	04/23/04 3:09	
tert-Amyl Methyl Ether (TAME)	<2 ug/l	2	1D42320	OA-1 (GC/MS)	IVK	04/23/04 3:09	
tert-Butyl Alcohol (TBA)	<50 ug/l	50	1D42320	OA-1 (GC/MS)	IVK	04/23/04 3:09	
Surrogate 4-Bromofluorobenzene	100 %			81-124	IVK	04/23/04 3:09	

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Barker-Lemar Associates
 1801 Industrial Circle
 West Des Moines, IA 50265

April 28, 2004

Work Order: 14D0851

Page 2 of 3

Determination of Volatile Petroleum Hydrocarbons - Quality Control

Keystone Laboratories, Inc. - Newton

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1D42320 - EPA 5030B										
Blank (1D42320-BLK1)				Prepared & Analyzed: 04/22/04						
Benzene	ND	1	ug/l							
Toluene	ND	1	"							
Ethylbenzene	ND	1	"							
Xylenes, total	ND	2	"							
Methyl-t-butyl Ether (MTBE)	ND	1	"							
Ethyl-tert-Butyl Ether (ETBE)	ND	2	"							
Di-iso-Propyl Ether (DIPE)	ND	2	"							
tert-Amyl Methyl Ether (TAME)	ND	2	"							
tert-Butyl Alcohol (TBA)	ND	50	"							
Surrogate 4-Bromofluorobenzene	49.1		"	50.0		98.2	81-124			
LCS (1D42320-BS1)				Prepared: 04/22/04 Analyzed: 04/23/04						
Benzene	61.9	1	ug/l	56.0		111	79-135			
Toluene	53.4	1	"	51.5		104	68-141			
Ethylbenzene	60.3	1	"	57.0		106	84-135			
Xylenes total	114.5	2	"	110.5		104	85-132			
Methyl-t-butyl Ether (MTBE)	175.7	1	"	151.5		116	65-135			
Surrogate 4-Bromofluorobenzene	49.2		"	50.0		98.4	81-124			
Calibration Check (1D42320-CCV1)				Prepared & Analyzed: 04/22/04						
Benzene	84.5	1	ug/l	81.0		104	70-130			
Toluene	71.6	1	"	66.5		108	70-130			
Ethylbenzene	72.2	1	"	69.5		104	70-130			
Xylenes, total	159.6	2	"	154.5		103	70-130			
Methyl-t-butyl Ether (MTBE)	77.1	1	"	68.5		113	70-130			
Ethyl-tert-Butyl Ether (ETBE)	74.1	2	"	67.0		111	70-130			
Di-iso-Propyl Ether (DIPE)	67.7	2	"	63.0		107	70-130			
tert-Amyl Methyl Ether (TAME)	64.4	2	"	58.5		110	70-130			
tert-Butyl Alcohol (TBA)	110.5	50	"	99.5		111	70-130			
Surrogate 4-Bromofluorobenzene	48.5		"	50.0		97.0	81-124			

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Barker-Lemar Associates
1801 Industrial Circle
West Des Moines, IA 50265

April 28, 2004
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Work Order: 14D0851

Determination of Volatile Petroleum Hydrocarbons - Quality Control
Keystone Laboratories, Inc. - Newton

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1D42320 - EPA 5030B										
Matrix Spike (1D42320-MS1)		Source: 14D0837-04		Prepared: 04/22/04		Analyzed: 04/23/04				
Benzene	16630	100	ug/l	5600	10200	115	63-138			
Toluene	9844	100	"	5150	4180	110	72-128			
Ethylbenzene	7128	100	"	5700	1060	106	69-139			
Xylenes total	15280	200	"	11050	3640	105	71-136			
Methyl-t-butyl Ether (MTBE)	24630	100	"	15150	6920	117	65-127			
Surrogate 4-Bromofluorobenzene	49.2		"	50.0		98.4	81-124			
Matrix Spike Dup (1D42320-MSD1)		Source: 14D0837-04		Prepared: 04/22/04		Analyzed: 04/23/04				
Benzene	16460	100	ug/l	5600	10200	112	63-138	1.03	12	
Toluene	9733	100	"	5150	4180	108	72-128	1.13	21	
Ethylbenzene	7219	100	"	5700	1060	108	69-139	1.27	12	
Xylenes total	15320	200	"	11050	3640	106	71-136	0.261	10	
Methyl-t-butyl Ether (MTBE)	24460	100	"	15150	6920	116	65-127	0.693	18	
Surrogate 4-Bromofluorobenzene	49.8		"	50.0		99.6	81-124			

ND = Non Detect; REC= Recovery; RPD= Relative Percent Difference

End of Report

Jeffrey King

Keystone Laboratories, Inc.
Jeffrey King, Ph.D.
Laboratory Director

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Data File : G:\MSCHEM\2\DATA\042204A2\2V018.D
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Sample : 14D0851-01
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Quant Time: Apr 23 13:46 2004

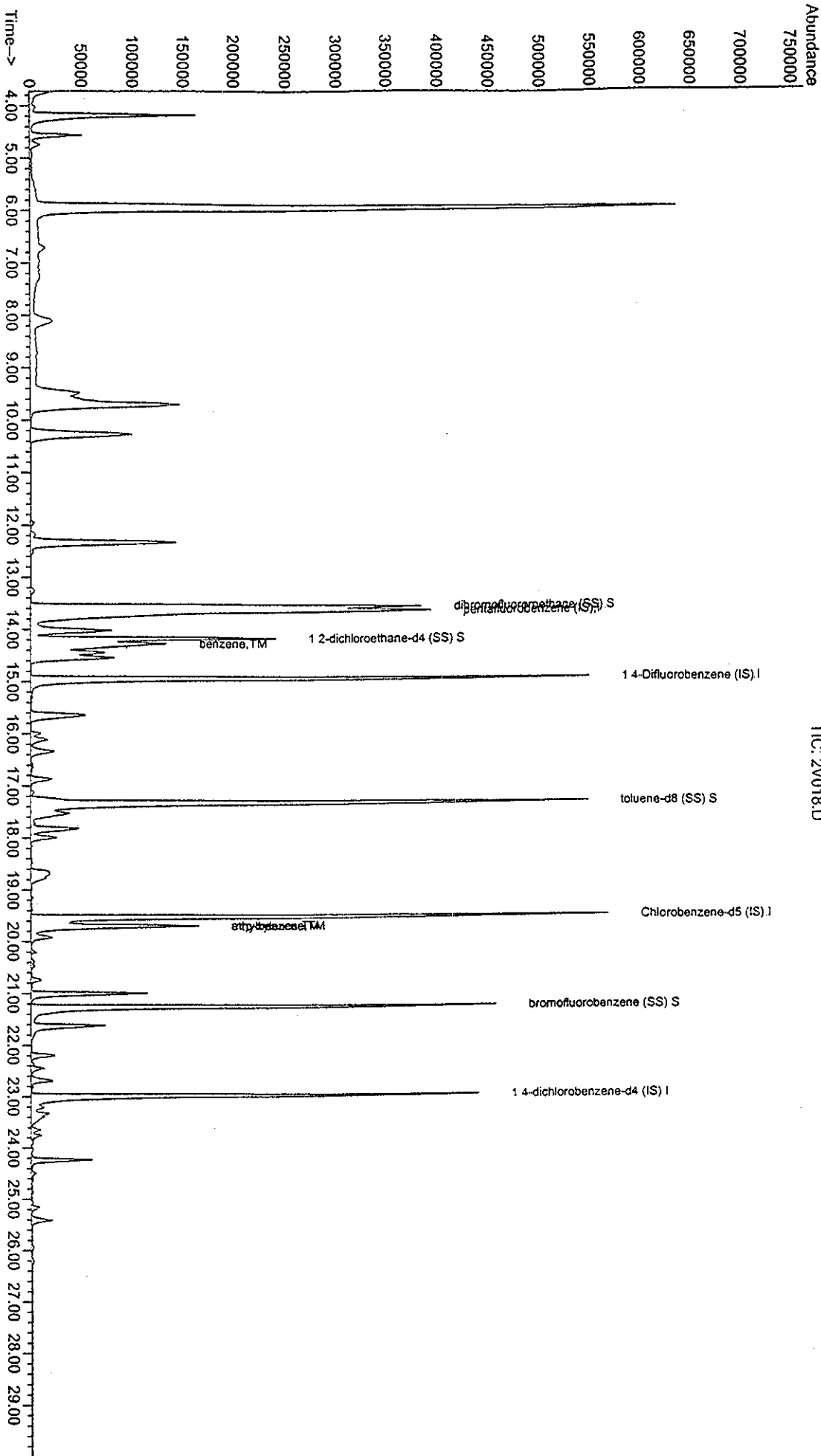
Quant Results File: BW041204.RES

Vial: 18
Operator: TVK
Inst: MS #2
Multiplier: 1.00

(103)
14D0851-01
14D0851-01

Method : G:\MSCHEM\2\METHODS\BW041204.M (RTE Integrator)
Title : BTEX Water
Last Update : Tue Apr 13 07:55:59 2004
Response via : Initial Calibration

TIC: 2V018.D



2V018.D BW041204.M

Fri Apr 23 09:09:39 2004

MSCHEM

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FORM: CCR 7.9